

ABSTRACT OF THE DISCLOSURE

A diffraction element having concave/convex-like diffraction gratings in its two surfaces from which at least two separated light beams can be taken in the same direction without changing largely the propagating direction of diffracted light even if the temperature of the operating environment changes. A diffraction grating having a concave/convex shape in cross-section is formed in the incoming-side surface of the transparent substrate and two diffraction gratings of concave/convex shape in cross-section are formed in the outgoing-side surface wherein the grating pitch of the first one is made equal to the grating pitch of one of the second ones.

In addition, a reflection type diffraction element exhibiting a good wavelength dependence of diffraction efficiency without being dependent largely on the direction of polarization of an incoming light is provided. A pseudo sawtooth-like diffraction grating is formed in either surface of the transparent substrate, a reflective film is formed on a diffraction grating portion, and an antireflective film is formed on the opposite surface.